



bw|HPC – C5

# Environment Module System



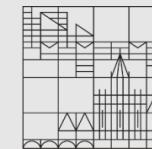
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Funding:



Baden-Württemberg  
MINISTERIUM FÜR WISSENSCHAFT, FORSCHUNG UND KUNST

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# Introduction

- Module System: Hardly used on desktop systems
- Common on clusters
- Problem: multiple versions of the same software packages and libraries are installed on the cluster.
- Solution: module system
- Each software version is installed as separate module
- Load the version you want to use

# Module Environment Overview

- Supplies software in several versions.
- Software can be used by loading modules.

> <b>module avail</b>	show all installed software packages
> <b>module avail compiler</b>	show all available compilers
> <b>module load &lt;module&gt;</b>	load a module in list
> <b>module unload &lt;module&gt;</b>	remove a module from list
> <b>module purge</b>	remove all modules
> <b>module list</b>	show all loaded modules
> <b>module show &lt;module&gt;</b>	show environment variables of module
> <b>module help &lt;module&gt;</b>	show usage information of module

# module avail

```
$ module avail
chem/gaussview/5.0.9
. . .
compiler/intel/15.1
compiler/intel/16.0
compiler/intel/17.0
. . .
math/matlab/R2017b
. . .
```

- Software is organized in **categories**:

- |            |          |
|------------|----------|
| ■ bio      | ■ lib    |
| ■ cae      | ■ math   |
| ■ chem     | ■ mpi    |
| ■ compiler | ■ numlib |
| ■ devel    | ■ phys   |
|            | ■ system |

# module load and list

```
$icc -version  
-bash: icc: command not found  
$ module load compiler/intel  
$icc -version  
icc (ICC) 14.0.4 20140805  
  
$ module list  
Currently Loaded Modulefiles:  
1) compiler/intel/14.0(default)  
  
$ module load compiler/intel/13.1  
ERROR:150: Module 'compiler/intel/13.1' conflicts with  
the currently loaded module(s) 'compiler/intel/14.0'
```

# module unload

```
$ module load compiler/intel/13.1
$ icc --version
icc (ICC) 13.1.3 20130607

$ module unload compiler/intel/13.1
$ module load compiler/intel/14.0

$ icc --version
icc (ICC) 14.0.4 20140805
```

# module show

How does the module command work?

- load: changes some environment variables
- unload: removes these changes

```
$ module show compiler/intel/14.0
setenv      INTEL_VERSION 14.0.4
prepend-path PATH /opt/bwhpc/common/compiler/intel/compxe...
prepend-path LD_LIBRARY_PATH /opt/bwhpc/common/compiler/i...
.
.
.
```

# module help

- Each module has a small help page
- Read it before you use the module the first time
- Contains cluster specific information

Example: \$ module help compiler/intel/14.0

- Which MKL version should I use?
- Which MPI version should I use?
- What to do in case of problems?